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2 ABSTRACT

3        The present invention is an improved apparatus and method for mass spectrometry using  
4        a dual ion trapping system. In a preferred embodiment of the present invention, three "linear"  
5        multipoles are combined to create a dual linear ion trap system for trapping, analyzing,  
6        fragmenting and transmitting parent and fragment ions to a mass analyzer – preferably a TOF  
7        mass analyzer. The dual ion trap according to the present invention includes two linear ion  
8        traps, one positioned before an analytic quadrupole and one after the analytic multipole. Both  
9        linear ion traps are multipoles composed of any desired number of rods – i.e. the traps are  
10        quadrupoles, pentapoles, hexapoles, octapoles, etc. Such arrangement enables one to maintain a  
11        high "duty cycle" while avoiding "memory effects" and also reduces the power consumed in  
12        operating the analyzing quadrupole.

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